

REQUEST FOR ACTION (RFA) RESPONSE

GLAST LAT Project Calorimeter Peer Review

17 – 18 March 2003

Action Item:	CAL – 009
Presentation Section:	Thermal
Submitted by:	Tom McCarthy

Request: Parts thermal analysis - Update Board level analyses using vacuum rated parts parameter, i.e., theta-jc, theta-cl, etc.

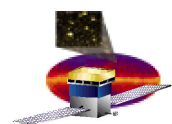
Reason / Comment: Board level analysis used theta-ja to tie component to board. The use of theta-ja, an ambient part parameter, to represent the part in vacuum may not be conservative. For vacuum/space application analysis, each part must be considered using theta-jc and how is part tied to board, i.e., through lead and/or is it bonded?

Response: 18 April 2003

Analysis was rerun using the theta-jb (junction to board), which accounted for theta-jc (junction to case) and theta-cb (case to board).

The attached view graph corrects the board level thermal analysis summary that was presented at the Peer Review (page 7-38) to address the request of this RFA.

The AFEE Thermal Study report will be updated to add this information.

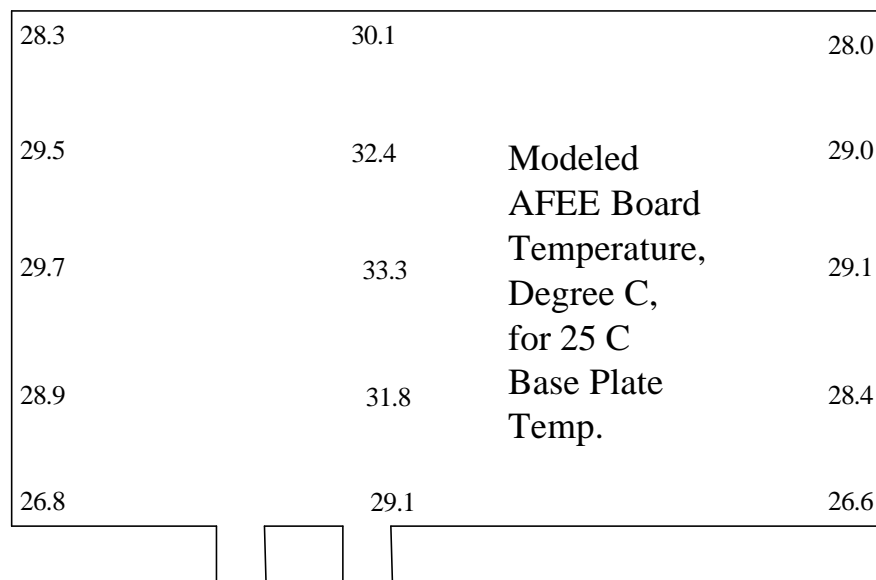


AFEE Thermal Analysis

- ❑ **AFEE Thermal Analysis Summary.** Dated 4/03 Author Peck Sohn, Swales Aerospace
- ❑ **Table of maximum silicon die temperature for 25 C Base Plate temperature**

Device	GCRC	GCFE	ADC	DAC	Ref.
Die Junction Temp. Degrees C	36.7	33.5	33.8	33.8	35.1

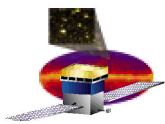
- ❑ **Analysis result, Calorimeter AFEE electronics do not have any thermal problems**



Assumptions

	Modeled Heat Dissipation	Theta Junction to Board (C/W)
GCRC	65 mW	50
GCFE	11.5 mW	114
ADC	2 mW	183
DAC	4 mW	86
Ref.	7 mW	232
Total Power per AFEE	952 mW	
AFEE PCB, Qty 2 of 1.4 mil thick Copper Thermal Plane Layers. Naval Research Lab Washington DC		





AFEE Thermal Analysis

- ❑ **AFEE Thermal Analysis Summary.** Dated 4/03 Author Peck Sohn, Swales Aerospace
- ❑ **Table of maximum silicon die temperature for 50 C Base Plate temperature**

Device	GCRC	GCFE	ADC	DAC	Ref.
Die Junction Temp. Degrees C	61.3	58.2	58.5	58.4	59.7

- ❑ **Analysis result, Calorimeter AFEE electronics do not have any thermal problems**

